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AUTHOR Downing, John
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ABSTRACT

The cognitive clarity theory focuses on the learning-to-read process rather than on the reading process of the mature reader. The cognitive clarity theory already seems to show some power in explaining some puzzling findings in reading research. Some examples of these paradoxes are: earlier letter-name knowledge is highly correlated with later reading achievement yet teaching letter-names does not help children learn to read; some children with reading disabilities are superior to normal readers in visual discrimination; learning to read two languages is easier than learning to read only one; and it is easier to learn to read in two writing systems than in only one. Reading and learning to read must employ processes already available for more general functioning. Thus, learning to read is the application of general cognitive abilities to this task. (WR)

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A Summary of Evidence Related to the Cognitive Clarity Theory of Reading

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John Downing
University of Victoria, Canada

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Only about three years ago Wendell Weaver (26, p. 5) wrote: "The reading research literature is disappointing just because it lacks systematic theoretical structuring." His comment has been a challenge to all of us to take the courage needed for the task of theory construction and the cut and thrust of debate which must follow. Weaver also pointed out that "choices between theories are rationally, not empirically, determined. The scientific community chooses one theory for acclaim and discards another because in view of the problems it sees as important one theory seems to subsume more of the

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evidence. Theories are 'invented' categorical systems of rationality, not 'discovered' universal ideas." (pp. 6-7).

Weaver's call for theory was an expression of the zeit-geist of this period in the development of the scientific study of the psychology of learning to read. The following paper is a descriptive summary of my own struggle to respond in this spirit. Because it is only a small beginning, its main claim to your attention is that it does seem "to subsume more of the evidence" from existing research findings which otherwise appear to be dislocated. This seems to be what Weaver expected in stating: "It is one task of theory to fill in the gaps with a logical structure, consistent with empirical findings, while waiting for experimental confirmations or denials of particular points of the theory." (p. 5).

THE THEORY

Weaver advised us "to delimit the domain of discourse so that it might cover a significant segment of process while maintaining a firm connection with the tested and the testable." (p. 5). Therefore, it seems appropriate to acknowledge from the outset that this "Cognitive Clarity Theory" focusses on the learning-to-read process rather than on the reading process of the mature reader, although it does not seem inconsistent with what we know about the latter or the relationship between the learning-to-read and the reading processes respectively.

The Cognitive Clarity Theory may be set out in the following brief steps:

(1) Until about a century ago the reading of written language was restricted to a tiny elite class of the population. Therefore, it is genetically impossible that any specific organ or area of the brain could have evolved for the reading process, as seems to be contended in some theories of

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congenital dyslexia, for instance. Reading and learning to read must employ processes already available for more general functioning. Thus, learning to read is the application of general cognitive abilities to this task.

(2) A peculiar difficulty in learning to read is that, unlike many other skills, it is not possible for the non-reader to imitate the actions of the reader. For example, the child cannot see exactly what the reader is doing nor is it clear why the reader does what he does.

(3) This obscurity of action and purpose causes the young child to enter the first stage of the learning-to-read process in a state of cognitive confusion in regard to the purpose and mechanism of reading. The beginner has great difficulty in understanding what reading is for and what actions he must learn. The linguistic concepts on which the task of learning to read depend also are not known to the young child. Hence, the normal condition of the beginning reader is cognitive confusion.

(4) The fundamental basis of learning to read is moving from this state of cognitive confusion to one of increasing cognitive clarity. The learning-to-read process, therefore, is a problem solving process, in which the child gradually acquires more and more of the necessary linguistic concepts, and an increasing understanding of the purpose and mechanism of the reading act.

(5) Although, the importance of this development of cognitive clarity is most apparent in the initial stages of literacy acquisition, cognitive clarity continues to develop throughout all the later stages of education as new abstract concepts of language are learned.

The above statement may oversimplify the child's problem in groping his way through the fog of the initial state of cognitive confusion. In the analysis of the data from the recently completed cross-cultural study of

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learning to read in 14 different countries, the model shown in figure 1 was devised to show the way in which the hazards of cognitive confusion may be increased (Downing - 5). It shows how the beginner's understanding and conceptualization of the task of reading is assailed simultaneously from three directions. Often the inputs from these three points are in conflict with each other.

----------[INSERT NEAR HERE FIGURE 1]----------

THE EVIDENCE

This summary is intended as a guide to the relevant literature and to bring together findings from quite widely dispersed sources.

(a) Initial Cognitive Confusion

(i) Vygotsky (24, p. 99) found in his research in Russia that "it is the abstract quality of written language that is the main stumbling block," and the child "has little motivation to learn writing when we begin to teach it. He feels no need for it and has only a vague idea of its usefulness."

(ii) Reid's (19, p. 58) focussed interview study of Scottish five-year-olds found that they had a "general lack of any specific expectancies of what reading was going to be like, of what the activity consisted in, of the purpose and use of it."

(iii) Downing's (2, p. 111) replication of Reid's method with English subjects of the same age concluded: "Young beginners have difficulty in understanding the purpose of written language," and "they have only a vague idea of how people read and they have a special difficulty in understanding abstract terms." (i.e. such as letter, word, number, etc.). In Downing's experiments not one single child used the category "a word" or "a sound" according to the adult's concepts of these units of spoken language.

(iv) Meltzer and Herse (12) found similar evidence of confusion over the concept of "a word" in written language in their study of American first graders and kindergarten children.

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(v) Oliver and Downing (15) developed an improved experimental technique for testing the child's conception of a spoken word, but their study produced similar results with Canadian kindergartners to Downing's original experiment with English children (#(iii) above).

(vi) Kingston, Weaver, and Figa (10, p.98) conducted a series of experiments to investigate American children's conceptions of the spoken and the written word. They concluded: "These five experiments demonstrate quite conclusively that first grade children lack precise concepts concerning the nature of a 'word'."

(vii) Oliver, Nelson and Downing (16) experimentally compared t.o. with i.t.a. and two other regularized orthographies. The results indicate that cognitive confusion regarding the concept of the grapheme is increased by the lack of a consistent marker for grapheme boundaries in t.o.

(viii) A paper and pencil group test of behavior related to cognitive clarity has been developed by Evanechko, Ollila, Downing and Braun (7). It's first use with a sample of 97 Canadian kindergartners shows the child's concept of the reading task is an important measure of reading readiness.

(ix) Ollila, Johnson and Downing (17) have adapted Elkonin's (6) technique for "materializing" the phoneme (originally used with the Russian language) and applied it in an experiment with English speaking Canadian kindergartners. The results show not only improved learning of the concept of the phoneme, but superior readiness in comparison with children taught by two other well-known American reading readiness programs.

(b) Development of Cognitive Clarity

(x) Downing (4) followed up the children in his first study (#(iii) above) in two further interview and test sessions, six and nine months

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respectively after beginning school at age 5. In these later sessions, "superior pupils displayed a more rapidly developing cognitive clarity. An intermediate group showed slower development of cognitive clarity, while the slowest two or three pupils remained in the state of cognitive confusion." (p. 18). Also, "the more progress they had made towards general cognitive clarity, 1. the better the children understood the communication purpose of the written form of language, 2. the clearer was their conception of the symbolic function of writing, 3. the better they understood the processes of decoding and encoding which relate written to spoken language, 4. the further advanced was their development of linguistic concepts, and 5. the better was their command of the technical terminology for such abstract units of language.

(xi) Lansdown and Davis (11, p. 24) used Reid's original interview method and Downing's experimental technique to compare 24 normal children with 30 mentally retarded pupils. They found that "the trends shown before were repeated" with the normal children, but that "consistent patterns of cognitive clarity" did not show "until the age of nine or so" in the retarded subjects. This study is particularly interesting because of this contrast in general intellectual development.

(xii) Vernon (23, p. 71) deserves the credit for originating this hypothesis. She reviewed all the evidence on reading disability in 1957 and concluded: "Thus the fundamental and basic characteristic of reading disability appears to be cognitive confusion." Also, the disabled reader is one who "remains in a state of confusion over the whole process." (p. 48).

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EXPLANATORY POWER

The Cognitive Clarity Theory already seems to show some power in explaining some puzzling contradictory findings in reading research. These have been discussed at greater length in a previous paper (Downing - 3). Briefly some examples of these paradoxes are:

(a) Earlier letter-name knowledge is highly correlated with later reading achievement (Gavel - 8) yet teaching letter-names does not help children learn to read (Ohnmacht - 14, Johnson - 9, Samuels - 20). Why? Natural uncoerced letter-name knowledge probably is a measure of cognitive clarity in respect of the concept of the letter in general and of certain letters in particular. Teaching letter-names, on the other hand, does not influence concept development. It is merely teaching the symptom.

(b) Some reading disability cases are superior to normal readers in visual discrimination (Serafica and Sigel - 21, Solomon - 22). Why? Categorizing and conceptualizing is, at least, equally as important as discrimination in learning to read. So long as the student persists in responding to the many tiny irrelevant differences between printed symbols he will remain cognitively confused about the significance of the smaller number of relevant categories among these symbols.

(c) Learning to read two languages is easier than learning to read only one (Modiano - 13, Österberg - 18). How? If the language of literacy teaching is the child's own a source of serious confusion is avoided (i.e. the mismatch between the child's language or dialect and the school's). Then subsequently the child can apply his cognitive clarity to reading in the second language or dialect.

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(d) It is easier to learn to read in two writing systems than only one (Downing - 1, Warburton and Southgate - 25). One special hazard for English speaking children is the complex or irregular orthography of English. Beginning with the simpler or more regular i.t.a. system facilitates cognitive clarity regarding the tasks of learning to read and write. Subsequently this cognitive clarity is available for coping with the complexities of t.o. The significance of the British i.t.a. experiment is this contribution it makes to our understanding of the psychological processes of learning-to-read. The publicity for American i.t.a. programs and materials should not blind us to the more fundamental theoretical implication. If i.t.a. facilitates cognitive clarity we need to ask ourselves "Why?" and follow up all the logical reasons. As Weaver warned us:

> "Research not only eliminates alternatives, it generates further alternatives, often alternatives more complicated and difficult to test than the original ones." (p. 4).

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Figure 1

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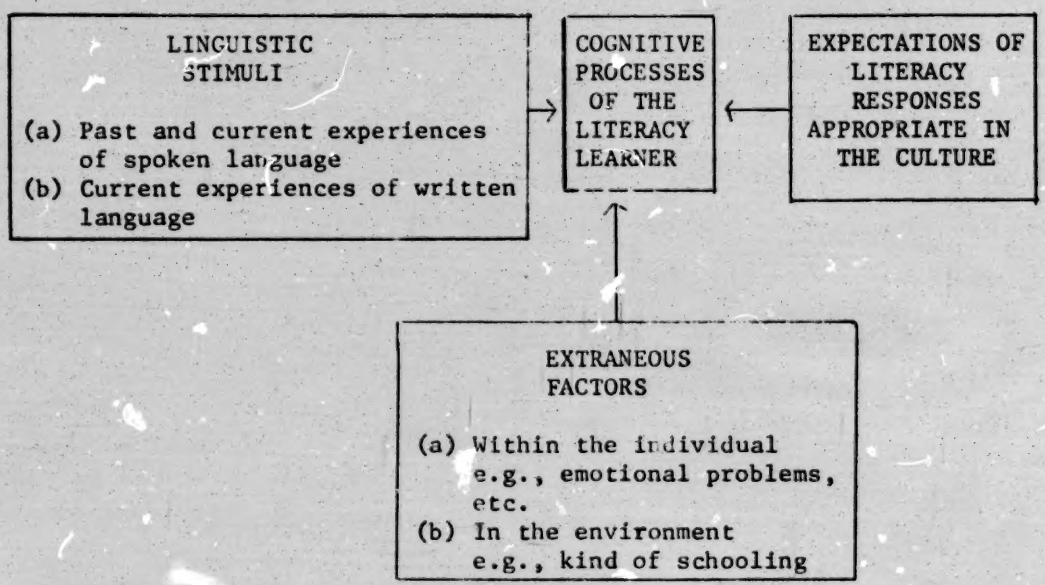
LINGUISTIC STIMULI
(a) Past and current experiences of spoken language
(b) Current experiences of written language
COGNITIVE PROCESSES OF THE LITERACY LEARNER
EXPECTATIONS OF LITERACY RESPONSES APPROPRIATE IN THE CULTURE
EXTRANEOUS FACTORS
(a) Within the individual e.g., emotional problems, etc.
(b) In the environment e.g., kind of schooling